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DARRACH'S

IMPROVED

Orthopedic Apparatus,



WHEELED CRUTCH,

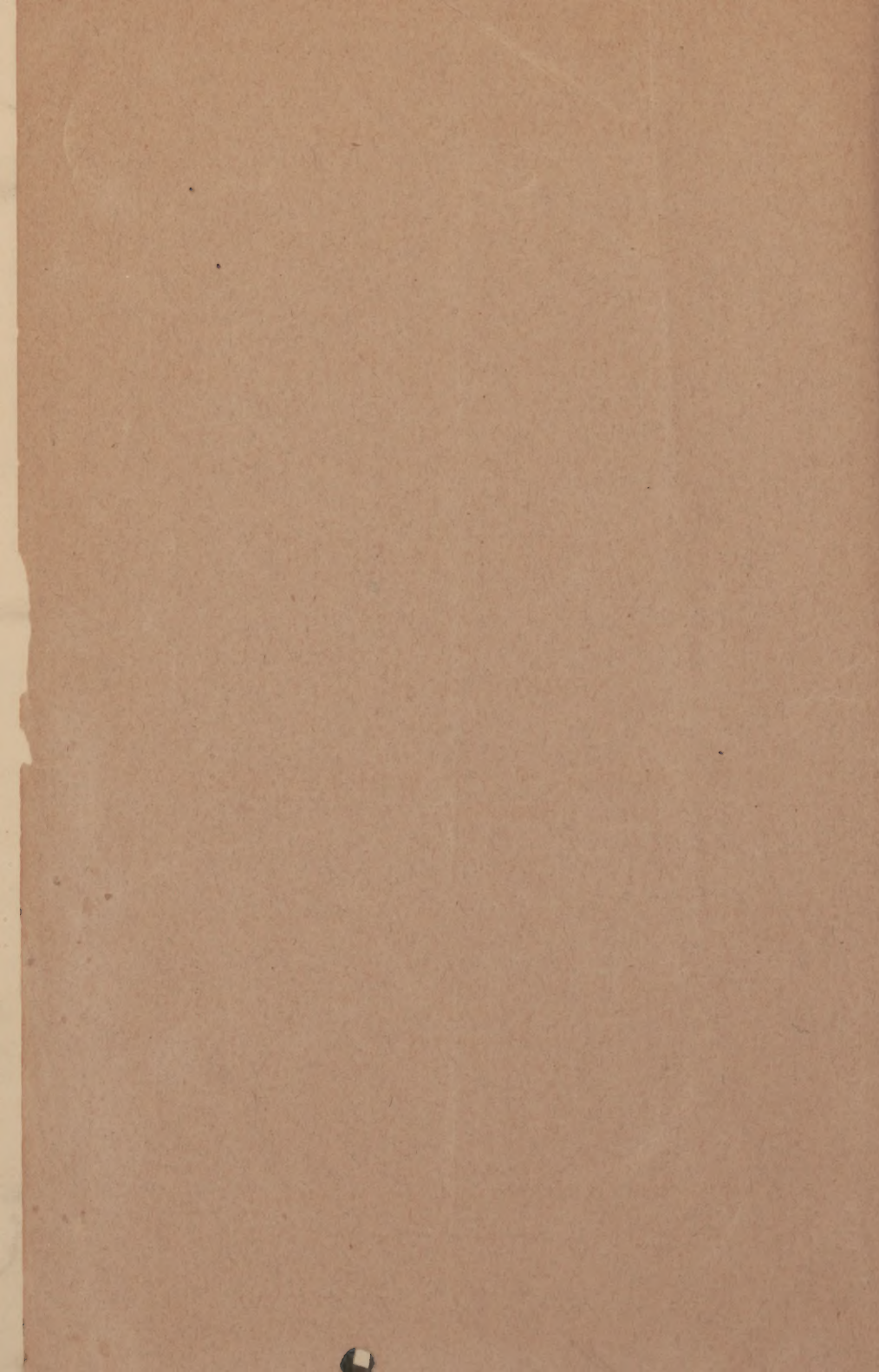
Prepared Raw-Hide Apparatus

FOR TREATMENT OF DEFORMITY, &c.

NEWARK, N. J. :

AMZI PIERSON & Co., Stationers and Printers, 188 Market-st.

1877.



DESCRIPTION OF
NEW AND IMPROVED
Orthopedic Apparatus,

INVENTED AND MANUFACTURED BY

S. A. DARRACH

OF

NEWARK, N. J.

With Reports of Awards granted by the United States Centennial
Commission.

ALSO,

LETTERS FROM SURGEONS, PHYSICIANS, AND OTHER PERSONS, (WHO
HAVE USED APPARATUS MADE BY S. A. DARRACH,) EXPRESS-
ING OPINIONS OF THE PRINCIPLES AND GENERAL
CHARACTER OF THE APPARATUS, AND
REPORTING PRACTICAL RESULTS
IN MANY IMPORTANT
CASES.

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Fig. 1.

S. A. DARRACH'S WHEELED CRUTCH, represented in Fig. 1, is a light, graceful and substantial frame, made with iron pipe and steel rods, open at the back, and mounted on four light metal wheels, which are bound with sole-leather to prevent sound and marking the floor. The rear wheels are supported in fixed parallel brackets, which extend sufficiently back of the centre of gravity to prevent any possibility of tipping backwards or rolling sideways; thus affording centres, or points of resistance, which cause the various inclinations of the body to impart a corresponding direction to the movement of the swivel brackets which support the front wheels, thereby directing the instrument in harmony with every movement of the person. The swivels and journals are made of polished steel, and arranged to reduce the friction to a minimum, thereby causing the crutch to roll so easily that it will move, by the slightest inclination of the body, in any way the impulse may direct, and requiring but slight effort to guide it. The top, or arm-rest, is cushioned, and is connected with the frame by an adjustable elastic attachment, which equalizes the pressure and prevents jar at the arms.

These crutches are made in various sizes, to suit children or adults, and are extensible to vary the elevation. The handle-bar

is also movable, to regulate the reach of the arms. An abdominal belt, having a triangular perineal band, or cushioned saddle, attached, and arranged to buckle at the back, constitutes a sling, or supporter, by which a patient can be partially suspended in the crutch by straps, attached to the frame under each arm, and connecting by buckles to the belt. This arrangement affords a rest, when a patient is inclined to intermit the effort of walking; it can be adjusted to relieve the arms, and to regulate the degree of weight allowed to be on the feet. This belt is an essential appendage for extremely helpless patients, or for those who have but little power of motion. Such patients can be supported chiefly from the seat, thus permitting greater freedom of action, and ability to obtain more natural exercise without risk of strain or fatigue. An adjustable sun-shade, that can be attached when desired, promotes the comfort of the occupant. A toy-tray, attached in front, adds to the pleasure of children.

These crutches are recommended by physicians and surgeons of the highest standing, who cheerfully certify to their practical utility and mechanical perfection.

It is unnecessary to enumerate the variety of cases in which this invention has rendered important service. I will refer only to its use for that class of cases which it was especially designed to relieve.

In the treatment of Pott's disease, or any form of spinal curvature, the repeated extensions of the spine produced by the gravity of the body, while using the crutch, is most effective in relieving pressure of the vertebræ, preventing development of deformity, and tending to reduce any that may already exist. This important feature, added to the advantage of exercise to encourage nutrition and general health, which is permitted by the use of this crutch without risk of injury, renders it an essential aid to secure the best results; and with the prepared raw-hide corset, hereinafter described, constitutes the most comfortable and effective apparatus for such cases, as has been fully proved by repeated successful results, where other apparatus had previously failed to benefit. All the theories of the apparatus are in full accord with the most approved principles of practice, and results prove the correctness of the theories.

For cases of hip disease, it is desirable to use the sling, and an elevated shoe on the sound foot. In this way the patient can be adjusted to prevent any possibility of shock to the diseased joint, as only the ball of the foot can touch the floor, when properly adjusted. Extension is promoted by the gravity of the limb, while in motion, assisted by a weight attached to the shoe. Another important appliance, to assist in the treatment of hip disease, is described with the raw-hide apparatus.

In cases of paralysis, or nervous affections, which impair the power of controlling motion, the confidence imparted by the security and comfort of the crutch relieves all distracting anxiety, encourages prolonged effort, concentration of energy, more natural response to the impulse of the mind, and proportionate increase in the voluntary action of the affected organs. The repeated practice accomplished in this way gradually restores power and control. Many cases of this class, that had been many years entirely helpless, have recovered. Some, that had never walked, have developed, by aid of this crutch, so they now walk without assistance.

The novelty and merit of the RAW-HIDE SPINAL SUPPORT, referred to in connection with the Wheeled-Crutch, consists in the character of the material as prepared for such purposes, and the method of forming the apparatus. This preparation of hide can be moulded accurately to any shape, and when completed is very light, and has such elasticity that will sustain any degree of strain or distortion without losing its shape. It is not affected by moisture or changes of temperature, and will not warp nor break. The degree of stiffness can be made suitable for the purpose required. Its peculiar qualities render it eminently fit as a base for the attachment of any form of braces to be applied to the limbs or body, and it is especially adapted for forming apparatus by my methods.

To form a SPINAL SUPPORT, I make an extension and adjustment of the patient to attain the normal form as nearly as possible. While so extended, I make a plaster mould of the entire length of the body, embracing the pelvis. In this mould a cast is made, upon which the support is formed. Before fitting the raw-hide, I frequently modify the cast, where I wish to relieve or

increase the tension of the support, and approximate more nearly the normal form.



Fig. 2.

Fig. 2 represents a *support* as applied for an ordinary case of *lateral curvature*. The corset is cut, partially separating the section which embraces the posterior projection. A lever connects with this part, having a fulcrum attached to the base of the corset, and is so arranged that the movement of a screw produces three directions of pressure opposed to the position of the deformity, tending to reduce the curvature. At each side of the corset are attached elastic adjustable crutches of peculiar shape, to embrace and support the arms in a comfortable manner, without incommoding the dress. The counter extension is supported by

a well-diffused bearing over the lower part of the back, assisted by broad, strong kid bands, or flexible extensions of the lower front part of the corset, which pass over the hips and connect over the lower part of the abdomen, by buckles and a non-elastic band. Small pads are attached inside of the flexible extensions which rest over the crest of the ilium. In this manner a firm, comfortable grip of the pelvis is secured. The rigid character of the support which embraces the ribs, having been formed to the extended position, with the substantial base provided, relieves the tendency to settle as the body assumes the erect position. The cylindrical form of the apparatus prevents any flexion of the body, and consequent pressure of the vertebræ from such motions. The raw-hide is perforated for ventilation; and is worn over an under-garment. The firm, smooth surface, allows all friction to take place between the garment and the support, and thus chafing of the person is prevented. The mode of forming the support diffuses the bearing so accurately over the whole surface of the body that there is no check of the circulation nor uncomfortable concentration of pressure. Various attach-

ments are applied to the corset, when needed, to increase the rigidity of any part, or to act as levers. A hip-joint lever, arranged to grasp the thigh, is a very important and novel attachment, essential in some cases.



Fig. 3.

Fig. 3 shows an attachment to support the head from the base of the skull. It is arranged to regulate the elevating tension and control the position of the head, allowing proper degree and direction of motions to make it easy for the patient, without permitting pressure of the vertebræ. This attachment is essential, when the disease is located in the cervical region. A modification of this instrument, designed for wry neck, secures a firm, comfortable grasp of the head, with power to apply any direction of tension.

Fig. 4 represents a *Knee-Brace*, designed to promote extension of contracted or ankylosed joints, and afford support to weak limbs. The clasps, which fit the limb above and below the knee, are made of prepared raw-hide, formed upon a cast, and are connected by steel bars, which have a suitable joint at the knee, with an arrangement for fastening a knee cap. At the back of the upper clasp a tube is attached, in which a rod telescopes. The lower end of this rod is connected with a stud, which slides on a rack attached to the lower clasp. On this rod is a spiral spring, one end of which rests against the stud, the other against the tube. The stud is moved by a pinion key, and fastens with a self-acting catch. When the stud is moved upward to cause extension, the spring is compressed in

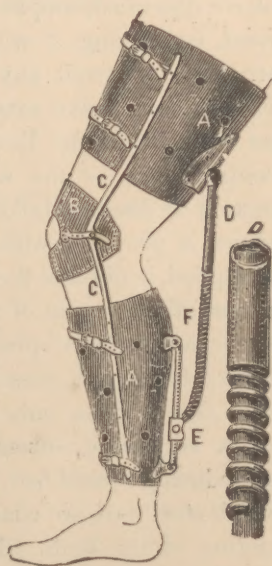


Fig. 4.

proportion to the resistance, thus providing a self-acting force to promote extension of the limb. When walking, the spring permits action of the knee, and can be adjusted to afford any degree of support, or limit flexion. By raising the catch which fastens the stud, free motion is allowed. The peculiar flexibility of the raw-hide clasps accommodates changes of shape in different positions of the limb. This quality, with the evenly-diffused grasp, makes the instrument comfortable, and not liable to get out of position. When it is desirable to prevent any motion of the joint, the spring can be exchanged for a tube, thus making a rigid bar. An attachment to produce an elongating tension, to relieve pressure of the articulating surfaces of the joint, is sometimes useful. An extension of the instrument to connect with the shoe is necessary when the ankle requires support, or it is desirable to relieve pressure of the joints by the resistance of the apparatus upon the thigh when the weight is thrown upon the limb.

A very complete apparatus for treatment of hip disease, or for some cases of paralysis and deformities, is the leg instrument above described, supplemented by the addition of a *compound hip joint*, connecting it with a raw-hide corset. This joint is constructed to permit any natural motion of the limb, having also provision to make extension. This compound joint can also be set to restrain the limb in any one or more directions, to resist contractions; or the whole joint can be locked, to prevent any motion of the hip, holding the limb rigid with the body. The corset is provided with double perineal bands. When extension is applied, it diffuses the resistance, relieving the bands, and causes a more direct action of the force. It also prevents the tendency to curvature of the spine often produced by hip disease. In some cases a full-length corset is best, with crutches attached to one or both sides. Some only require a hip corset.

A very light, substantial apparatus, that has proved effective in reducing *bowed legs*, is formed by a hip corset of raw-hide, to which steel bars are connected by swivel joints, which allow every motion of the limb. The bars have a double joint at the knee; one free, to allow natural flexion; the other operated by a worm screw, to apply proper direction of tension. The lower ends of

the bars connect with stirrups that are attached to the shoes by joints similar to those at the hips. The limbs are grasped by suitable raw-hide clasps, to which the bars are fastened. The important advantage of this apparatus, as compared with those in general use, for such cases, consists in the complete freedom of action allowed the hip and ankle joints, thus enabling the child to walk more naturally, with less danger of falling; and the effective fulcrum provided by the hip corset gives better control of the straightening force. In some cases the addition of perineal bands will aid in promoting the object, by assisting to support the body and relieving the strain upon the limbs.

The foregoing cuts and descriptions are only designed to convey a general idea of the principles and character of the chief varieties of apparatus I manufacture, for which I have been granted patents. It is not practicable to give an intelligible description of the various modifications and new inventions designed for and adapted to rare and special cases, and various devices to promote the comfort and improvement of invalids.

Instructions for Persons Desiring to Order Apparatus.

Patients needing any of the improved Raw-Hide apparatus, must be seen by Mr. Darrach, either in Newark or at their own residence. It is especially desirable he should see the patient when a spinal support is required, as much of the virtue of the apparatus is dependent upon the management and adjustment of the patient when making the mould, and subsequent modification of the cast, suggested by examination of the patient. When required to visit cases at a distance, there will be additional charge for time and expense of the journey. One interview, at the time of making the mould, is usually all that is required. The apparatus is so simple there is no risk of mistake in applying it. In some cases, however, where there is extreme deformity or other complications, it is important the patient should be under the care of Mr. Darrach for a short time, when the apparatus is first applied, until the adjustment can be regulated to suit the case, and the patient instructed in the management of the apparatus. A week or two is usually sufficient for the purpose. Such patients can be provided with suitable accommodations at moderate cost.

To prevent misapprehension, it is necessary to state that Mr. Darrach does not assume the treatment of patients, only so far as the application of suitable mechanical aid. In all cases where the condition of the patient is obscure, or there may be doubt about the propriety of applying apparatus, Mr. Darrach consults competent surgeons. When any ordinary or standard form of apparatus is preferred, Mr. Darrach will supply it as low as any manufacturer.

Prices of prepared Raw-Hide apparatus vary according to the condition of the case, the attachment required, and other circumstances. It is only practicable to give an approximate idea of the cost. From \$25 to \$50 covers the ordinary range of prices for

spinal supports; exceptional cases cost as high as \$75. The compound hip-joint apparatus, with all combinations, ranges from \$50 to \$75. Modifications of the above apparatus, range from \$25 to \$40. Bow-leg apparatus, \$30 to \$40. Knee-joint apparatus, \$20 to \$40. All the foregoing apparatus is made of the best quality of steel, carefully finished and nickel-plated.

The standard, or first-class wheeled crutches, are built in the best possible manner, with every improvement to secure comfort, durability, and ornamental appearance. The frame of the crutch is nickel-plated. The arm-rest is cushioned with best quality of curled hair, covered with selected morroco, faced with patent leather, and attached to the frame with an adjustable spring. The wheels are turned and bound with sole-leather, and the swivels provided with rubber buffers.

The second-class crutches are japanned throughout. The leather-covered arm-rest with the spring attachment is omitted, and cushions attached to the frame substituted. The rubber buffers and leather tires are also omitted.

When ordering a Wheeled Crutch, state if first or second-class is wanted. State what extra attachments, if any, are needed, and send width of body in direct line from arm-pit to arm-pit, distance from arm-pit to floor, and circumference of waist over under-clothing, *when supporter* is needed.

TO MEASURE WIDTH OF BODY CORRECTLY,

Place a stick under each arm, close to the body; take the distance between the sticks, at right angles to them; the sticks must be held parallel. The price will be indicated by comparing the measurement from the arm-pit to floor with the figures designated as the lowest adjustment in the accompanying table.

**Table giving Price, Diameter of Wheels, and Capacity to Elevate,
of the various sizes of Wheeled Crutches.**

	LOWEST ADJUSTMENT. Distance From arm-pit to floor.	CAPACITY TO ELEVATE.
No. 1 SIZES.	20 inches.	6 inches.
Diameter of Wheels, 6 in.	21 "	6½ "
Price, 1st Class, - \$50.	22 "	7 "
" 2d " - 35.	23 "	7½ "
	24 "	8 "
	25 "	8½ "
No. 2 SIZES.	26 "	9 "
Diameter of Wheels, 8 in.	27 "	10 "
Price, 1st Class, - \$60.	28 "	11 "
" 2d " - 40.	29 "	12 "
	30 "	13 "
No. 3 SIZES.	32 "	14 "
Diameter of Wheels, 10 in.	34 "	16 "
Price, 1st Class, - \$75.	36 "	18 "
" 2d " - 50.	38 "	20 "
	40 "	22 "

PRICES OF EXTRA ATTACHMENTS.

Supporters for No. 1 sizes,	\$6.00
" " " 2 "	8.00
" " " 3 "	10.00
Special supporters adapted to very sensitive persons, but seldom necessary,	15.00
Sunshades and Fixtures,	\$10.00 to 12.00
Head-Sling, to be used with the Wheeled Crutch for some cases of spine disease,	8.00
Toy-Trays,	2.50

TESTIMONIALS.

INTERNATIONAL EXHIBITION,

PHILADELPHIA.

The United States Centennial Commission has examined the report of the Judges, and accepted the following reasons, and decreed an award in conformity therewith:

PHILADELPHIA, December 7, 1876

Report of Awards.

Product: Raw-Hide Apparatus for Spinal Curvature: also, Hip and Knee Joint and Bow-Leg Apparatus.

Name and address of exhibitor: SAMUEL ADGÈR DARRACH, Newark, N. J.

The undersigned, having examined the product herein described, respectfully recommends the same to the United States Centennial Commission for Award for the following reasons, viz:

Originality of the use of the material, the ease and perfection with which it can be moulded to deformed shapes, its subsequent lightness, firmness, perfect support afforded, and its comfort to the patient. For the simple, firm and effective mode in which proper and needed force can be applied in any direction, and for the permanent security and comfort of the counter extension secured.

C. B. WHITE, M.D.

Signature of the Judge.

Approval of Group Judges:

J. H. THOMPSON, A.M., M.D.

W. ROTH, Surgeon-General, Saxony, German Army.

DR. ERNST V. FLEISCHL.

A true copy of the record.

[SEAL]

FRANCIS A. WALKER,

Chief of Bureau of Awards.

Given by authority of the United States Centennial Commission.

A. F. GOSHORN, Director-General.

J. L. CAMPBELL, Secretary.

J. R. HAWLEY, President.

INTERNATIONAL EXHIBITION,

PHILADELPHIA.

The United States Centennial Commission has examined the report of the Judges, and accepted the following reasons, and decreed award in conformity therewith:

PHILADELPHIA, January 8, 1877.

Report on Awards.

Product: Wheeled Crutches.

Name and address of exhibitor: SAMUEL ADGER DARRACH, Newark, N. J.

The undersigned, having examined the product herein described, respectfully recommends the same to the United States Centennial Commission for Award, for the following reasons, viz:

Originality of design, perfection of mechanism, general suitability to the purposes desired, and demonstrated usefulness.

C. B. WHITE, M.D.

Signature of the Judge.

Approval of Group Judges:

J. H. THOMPSON, A.M., M.D.

W. ROTH, Surgeon-General, Saxony, German Army.

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J. R. HAWLEY, President.

EAST ORANGE, N. J.

To whom it may concern:

This is to certify, that during the past four years I have had favorable opportunities for the employment of the several varieties of apparatus invented and manufactured by Mr. S. A. Darrach, viz: his Wheeled Crutch, the Corset used in organic troubles of the spine, Knee-Joint Apparatus, apparatus for correcting deformities of the lower extremities, &c., &c., &c., and it is no exaggeration to state, that in every instance the result has been *more than satisfactory*.

I feel justified in asserting that there is nothing in the whole domain of mechanical surgery which in any way equals the inventions to which he invites attention.

FRANK WILMARTH, M.D.,

Surgeon to St. Barnabas Hospital, &c.

NEWARK, N. J.

MR. DARRACH:

Dear Sir: It gives me real pleasure to add the weight of my testimony as to the superlative value of your Raw-Hide Apparatus. The point which alone would place it beyond comparison with the ordinary forms of instruments, is its *broad, light, perfect-fitting basis of support*, without which no power can be applied, except at the cost of local injury to the point of counter pressure, the fulcrum of the lever, and with which almost any amount of force may be used without injury. This has been the desideratum in all surgical

appliances, and is obtained only in immovable apparatus—the heavy plaster of Paris or starch bandage.

The instrument you applied to my little patient, Katie Z., (bow legs,) while it supported the knees perfectly, allowed so much motion that she was able to go up and down stairs, crawl on and off a chair, &c., without difficulty the first day. I had looked carefully for an apparatus which would be light, mobile, and would distribute the pressure over a considerable surface; and, until Dr. Wilmarth directed me to you, had concluded to keep her off her feet, using a hand-velocipede until her general condition was such as to warrant applying what I was able to find. The support which your apparatus gave for three months was sufficient (as her health steadily improved with the exercise she was able to take) to bring the limbs to the normal, and no bowing is now apparent, though she has been without the support for some time.

The other case, Ettie S., (lateral curvature of the spine,) I have not been able to watch so closely, but at the last report she was wearing your Corset with perfect comfort. The child was delicate, and had been unable to wear the best apparatus I could procure in New York more than half a day at a time. As soon as sufficient pressure was used to give the support she needed, the point of support became tender, and pressure had to be taken off before many hours.

It gives me pleasure to speak of these cases thus fully, because they illustrate the important points—first, a broad basis; second, lightness and mobility, which allows *exercise* while the body is supported.

Very sincerely,

GEO. A. VAN WAGENEN, M.D.,
(late) House Surgeon, Bellevue Hospital, N. Y. city.

NEWARK, N. J., 586 Broad st.

MR. S. A. DARRACH:

Dear Sir: It is a pleasure to bestow praise where it is most eminently due; and in my opinion the various forms of apparatus which you are able to make from your Prepared Raw-Hide are deserving of much more credit than has heretofore been awarded to them. I am able to speak from a personal knowledge of them, and very sincerely hope the medical profession may be induced not only to inspect your method, but to make trial of it in the various forms of disease to which it is applicable—the general points of commendation of the apparatus being its perfect adaptability to the part, its lightness and the ease with which it is worn, its non-absorbing power, and hence the shape of the raw-hide not being affected by the perspiration of the body.

I have now used a splint you made me for a case of chronic synovitis of the knee joint, and where ankylosis gave the only hope of relief, I most heartily recommend it.

The Corset I have used in two cases, and I know of nothing that can fulfill the same indications.

Particularly would I speak of your splint for morbus coxarius. This was a case of a girl aged 9, who had been suffering from disease of the joint for six months. No abscess had yet formed, but the limb was greatly atrophied, and she was unable to bear the slightest weight on it, any attempt at standing causing great pain in the joint. Your splint was applied, and after a short time she was able to run about all day without pain or fatigue. This splint was worn about six months, when she died from typhoid fever, ending my chance for observation.

Very truly,

ARCHIBALD MERCER, M.D.
Surgeon to St. Barnabas Hospital.

No. 13 Central Ave., Newark, N. J.

MR. S. A. DARRACH:

Dear Sir: I take pleasure in testifying to the efficiency and practical adaptedness of your different surgical appliances, so far as I have used them or seen them in hospital or private practice.

Yours truly,

EDGAR HOLDEN, M.D.

BLACKWELL'S ISLAND, Sept. 3d, 1877.

MR. SAM'L A. DARRACH, Newark, N. J.:—

My Dear Sir: It affords me the greatest gratification to be able to give your instruments my heartiest endorsement. I have been familiar with them all since their first introduction to the medical profession, and have personally applied them in 21 cases, with advantage to the patient in every instance, and frequently with the most flattering results.

The Raw-Hide instruments demand special notice. Their durability, lightness, elasticity, and the perfect fit obtained by forming them over a plaster cast, renders them far superior to anything now in use: and the comfort with which patients wear them in those exquisitely painful affections of the spine, caries, synovitis, etc., shows that suffering humanity owes you a debt of gratitude greater than dollars and cents can ever repay.

I have watched with great interest the various improvements you have added from time to time, and particularly in preparing the raw-hide so that it would effectually resist the action of moisture, and I congratulate you on your success. It works perfectly now, and is fast winning the reputation it so justly deserves, viz: that of being the very best material for the purposes you have adapted it that has ever yet been used.

Respectfully yours,

LOUIS L. SEAMAN, M.D.
House Physician, Alms House, B. I.

NEWARK, N. J.

It gives us great pleasure to certify to the value of the Wheeled Crutch and the Hide Corset made by Mr. Darrach. We have used them in our practice on several occasions, and always with satisfactory results. They appear to us to fulfill all the indications presented in Pott's disease of the spine better than any other style of apparatus within our cognizance.

DRS. DOUGHERTY & BRUMLEY,
82 Halsey street.

BOONVILLE, Mo.—*Dear Sir:* Thanks to the skillful surgical aid given by Dr. L. A. Sayre, of New York, and to your Wheel Crutch, my boy is rapidly recovering the use of his limbs. He was attacked with Perespheral Paralysis when about eight months old, and had never walked a step or stood erect until within the last three months. He is now eight years old. His limbs were operated upon by Dr. Sayre on the 6th of November last, at which time I obtained one of your crutches for him, and he has been using it constantly ever since. He now goes wherever he chooses in the yard or on the sidewalk, can *run* and *jump* in his crutch, and is beginning to walk a little without it. I consider his perfect cure now only a matter of time, and scarcely believe it would have been possible without the wheel-crutch.

Respectfully,

JON. D. MYERS, M.D.

PHILADELPHIA, PA.

I do most cordially endorse the appliances for deformities made by Mr. S. A. Darrach, of Newark, N. J., which I have tested with satisfaction in repeated instances.

F. F. MAURY, M.D.,
one of the Surgeons of the Philadelphia Hospital,
and Lecturer at Jefferson Medical College.

I cordially unite in Dr. Maury's endorsement as above.

S. W. GROSS, M.D.

PHILADELPHIA, N. W. cor. Arch and 13th sts.—The mechanical appliances for the treatment of deformities made by Mr. S. A. Darrach are excellently constructed, and have much merit and originality.

R. J. LEVIS, M.D.,
Surgeon, Pennsylvania Hospital.

PHILADELPHIA, 1503 Spruce St.—I had the pleasure some three years since of introducing your Wheel-Crutch to such of my professional brethren as were in attendance on the session of the Medical Society of the State of Pennsylvania. Whatever I may have ventured to say in its commendation at that time, has been fully sustained by my subsequent experience. Nothing so perfect in the way of an artificial aid to locomotion has ever been devised. It is the realization of an ideal which every one who has paid much attention to Orthopedics must have conceived, but which no one has before succeeded in producing.

In the management of Pott's disease of the spine, infantile paralysis, diseases of the hip joint, affections of the spinal cord—in short, wherever locomotion and the upright posture are desirable, and would otherwise be impossible, I find it an invaluable auxiliary.

Yours very truly,

BENJAMIN LEE, M.D.

CLEVELAND, O., 100 Pub. Square.—Your favor of 16th duly received. Your apparatus and all connected I presented at State Society. Each article was thoroughly and accurately examined by the members of the Society, and many expressed their entire and complete satisfaction of your braces for curvature and hip disease. The latter was thought to be perfect, and the advantages very superior. The Wheeled Crutch received high encomiums.

Thanking you for your kindness, believe me,

Yours, most respectfully,

H. F. BIGGER, M.D.

MILTON, PA.—The Wheeled Crutch I ordered from you one year ago was for a gentleman who had paralysis of the lower extremities, caused by spinal disease. He had not been able to walk for eight years, and on first trial of the Crutch his knees were so ankylosed and legs contracted that he could only touch his toes to the ground. He can now place his feet properly on the ground and straighten his limbs. His appetite, digestion and strength are very much improved. He travels down town, or any place on a level, with ease and rapidity. He thinks he owes all his improvement to your Crutch, and expects some day to be able to walk without its aid. Any person doubting the reliability of your Crutch in paraplegia, spinal disease, &c., and would like the opinion of some one not pecuniarily interested, you may refer to me.

Yours,

JOHN MURRAY, M.D.

NEWBURGH.—I have observed with interest the Wheeled Crutch you invented and made for your little girl, and noted her decided improvement and recovery while using it. I can unhesitatingly recommend it for similar cases of Spinal Disease or Paralysis.

Yours truly,

S. ELY, M.D., Newburg, N. Y.

I have for years felt the need of some apparatus similar to your Wheeled Crutch. Failing to find anything practical for the purpose, I made an attempt to design a suitable instrument; while thus occupied your Wheeled Crutch was shown to me, and seemed *complete* in every detail. During the past year, I have applied it in various cases and have seen such direct and important benefit from using it, that I can honestly recommend it to the attention of the medical profession.

Yours truly,

L. A. SAYRE, M.D., 285 5th Avenue, N. Y.

DEERFIELD, MASS.—Your Wheeled Crutch which I bought last Winter for my grandchild is proving all and even more than was claimed for it. The child is now more than 2½ years old: for the last year has been crippled in one of her legs by paralysis and deep-seated abscess. By use of your Crutch she can go with wonderful rapidity about the house, from room to room.

The child enjoys the Crutch so much that if her mother is to spend only a few hours at a neighbor's, she takes the Crutch along for the ease and comfort it gives in caring for the child. We would not know how to get along without it. The child is steadily and surely gaining, and will fully recover the use of the limb, as I fully believe, through the aid of the Crutch.

Yours very truly,

R. N. PORTER, M.D.

NEWARK, N. J.—I have for some time been pleased with the working of your Wheeled Crutch, and from what I know of the results am prepared to recommend it. I fully believe it is a very important aid to recovery in nearly all cases of spinal disease, and great advantage in most cases where ordinary Crutches would be used, and in many cases that could not support themselves with such crutches it is of vital importance. It would be useless to enumerate the great variety of cases where this invention can be applied with advantage. The one in use at the Home of the Friendless in this city is an important aid.

Yours truly,

JOHN M. RAND, M.D.,

Sen. Physician for the Home of the Friendless.

INSTITUTION FOR THE CURE OF CHRONIC DISEASES, 69 WEST 38TH STREET, NEW YORK.—I am pleased with the operation of your Rolling Crutch. It is not merely one of those substitutes for the lower extremities whose effect is to confine and render hopeless any disability they may suffer, but it is a direct means of increasing the use, and therefore the development and power and permanent usefulness of the limbs. In this respect your instrument is but another development of the ideas and methods I have long cherished, whose purpose is not attained by mere palliation, but only in *restoring health*.

Very truly yours,

G. H. TAYLOR, M.D.

COR. WAVERLY AND PALISADE AVE., JERSEY CITY HEIGHTS.—From personal observation of results obtained in my practice of application and use of your Wheeled Crutch, I can certainly recommend it to those who suffer from weakness of lower extremities, and who require properly applied exercise to develop motive power.

Yours, etc.,

NEWELL, M.D.

PENNSYLVANIA TRAINING SCHOOL FOR FEEBLE-MINDED CHILDREN, MEDIA, Pa.—Your Wheeled Crutches I have in use for our afflicted children are *very satisfactory*.

Yours truly,

DR. ISAAC N. KERLIN.

NEW YORK ASYLUM FOR IDIOTS, SYRACUSE, N. Y.—The Patent Wheeled Crutch I bought of you for use of my patients has answered its purpose *very well*. I think it will be useful in many cases that occur in general practice.

I remain, yours truly,

H. B. WILBUR, M.D.

MONTCLAIR, N. J.—A patient of mine, with paraplegia, of three years' standing, has made a trial of your Wheeled Crutch with the happiest result. So great has been the improvement, that complete restoration seems highly probable.

J. W. PINKHAM, M.D.

NEW ORLEANS.—I take pleasure to state that I have derived great benefit from the use of your Wheeled Crutch. I consider it a most precious resource in the treatment of many afflictions, such as spine and hip disease, paralysis, &c., and can honestly recommend it.

F. FORMENTO, M.D.

CINCINNATI.—I thank you for sending me cut and description of your Patent Wheeled Crutch, because I am happy to see that such a useful instrument is provided for the relief of the afflicted, and the good it will do in preventing deformities of physical development.

A. CURTIS, M.D.,

Prof. of Physiology and Hygiene and Prac. of Med. and Surg.

NEWARK, N. J.—I do not think I can too highly recommend Mr. Darrach's appliances for hip-joint disease, spinal curvature, &c., having used them in several cases in my practice with great benefit.

GEO. S. WARD, M.D.

BOONVILLE, Mo.—I received the Crutch (ordered a short time ago) in good order, and my patient is progressing finely with it. It is a case of hip joint disease, with shortening of one limb. Wishing you great success, I remain,

Truly yours,

J. D. MYERS, M.D.

WASHINGTON, D. C., 1324 Mass. Ave.—I am preparing the report for the Centennial Commission which is intended to mark the progress in Prosthesis during the last century. I shall be glad if you will send me a description of your apparatus, with a cut illustrating, as I wish to introduce it and make special reference to it in my report—as soon as possible. I refer to your Hide apparatus as well as Crutch.

Truly yours,

J. H. THOMPSON, M.D.,
Judge, Group XXIV.

NEWARK, N. J.—I do myself a pleasure in saying that I have examined the various instruments invented by you for the treatment of deformities, and in my opinion your Raw-Hide Corset meets a want long felt by the profession. I have had some experience in its use in the treatment of lateral curvature of the spine, and think it the very best I have ever seen. While in Europe, I had my attention called to various instruments of the kind, but I am free to say that in lightness and adaptability for the purposes, I think it superior to all others. Your Wheeled Crutch needs only to be seen to be appreciated.

Respectfully,

H. H. TICHENOR, M.D.

HOUSTON, TEX.—Your letter of 12th inst., also the Wheeled Crutch for my little Daisie, received, and the letter with mementoes from your little girls, duly appreciated by my afflicted daughter. Daisie is daily walking in the "Pelosipede," as she calls it, but she requires the assistance of her brother to enable her to navigate. I think she will soon learn to use it without assistance.

I regard your Wheeled Crutch as a success, and it will be beneficial to my paralytic child. You are authorized to use my name in recommending the use of your Crutch.

Yours truly,

H. F. STUART, M.D.

SALEM, OHIO.—The Crutch ordered was duly received. I have waited to give the appliance a fair test, and thus be able to give you results.

My little patient, eleven years of age, who had not walked a step, had not even assumed the perpendicular position without assistance for sixteen months, was adjusted to the Crutch, and before being taken out succeeded in crossing the room without assistance. He can now, at the end of two weeks, travel where he chooses through the rooms and on the same floor, remaining in the crutch an hour or two without fatigue, and is daily gaining strength.

I found no difficulty in adjusting the appliance, nor in giving the patient instructions as to its use, as he seemed instinctively to understand how to operate it; while I feel assured of the correctness of my belief that but for this, or some such apparatus, he would never have taken a step unassisted by some second person, his disorder being that peculiar species of rheumatism which rarely leaves its victim until permanently disabled.

Truly yours, &c.,

GUSTAVE A. SHAW, M.D.

PHILADELPHIA.—After having considerable experience with the Wheeled Crutch made by Sam'l A. Darrach, I can recommend the apparatus in every respect. It has been of great service in the Hospital for deformities and nervous diseases.

THOMAS MORTON, M.D.

Surgeon, Penna. and Orthopedic Hospital.

ORANGE, N. J.—I have used your Wheeled Crutch and prepared Raw-Hide apparatus in my practice, with satisfaction. You are authorized to refer to me when you wish.

WM. PIERSON, M.D.

NEWARK, N. J.—*To whom it may concern:* Know that at four years of age my little boy had never walked—his legs and ankles were too weak to support his otherwise well-developed frame. I bought a Wheel-Crutch of Mr. S. A. Darrach. My child was delighted with it—wished to be in at all times. At first we had to help him move it, but soon he could control its movements himself, and I think it was less than a year that he was walking without any assistance.

Respectfully,

SAM'L W. GEERY,

156 Roseville Ave.

NEWARK, N. J.—I have upon two several occasions made use of your apparatus, and feel no hesitation in saying that it is, in every respect, "just the thing needed," when any mechanical support is necessary to assist nature in the cure of diseased bones and joints.

Truly,

ARTHUR WARD, M.D., 17 Lombardy st.

NEWARK, N. J., 739 Broad St.—My little girl has been wearing a Corset of your manufacture, as a remedy for spinal curvature. for several months past, and the results have been exceedingly beneficial and encouraging, and I shall be glad to recommend you and your appliances whenever possible.

Yours Resp'y,

FREDERICK H. PILSH, Att'y at Law.

NEWARK, N. J.—The improved hip-joint splint you made for my son, is very satisfactory in every respect—superior to the long rigid splint which he was using before I got yours. Since the change of apparatus he sleeps soundly. The abscesses have healed. He walks with ease in your splint, and is recovering without any shortening of the limb.

Yours truly,

G. T. HABBEMA.

NEWARK, August, 1877.—Our little boy, when 18 months old, was disabled by dental paralysis, and remained entirely helpless, unable to stand, for nearly two years, when we were advised by our physician to procure one of your Wheel-Crutches. He was very soon able to move about the room with it, and was much pleased in making an effort to walk, and gradually improved. Within two years he has developed so much he now can run and walk freely without the aid of the crutch or any other assistance. We attribute his recovery to the use of the Wheel-Crutch, and do most cordially endorse it as an *essential* aid in treating such cases.

Yours truly,

J. T. FEAREY.

NEWARK, N. J.—It affords me pleasure to recommend your appliance for the treatment of disease of the spine. My son has been afflicted this way since infancy. He is now five years of age. During the past three years he has been under the care of physicians who make a specialty of this class of diseases, but with little improvement. During this time the child lost all use of his limbs, and was unable to walk a step. For some three months he has worn your Raw-Hide Corset, with the head-support attachment, and used the Wheel-Crutch, and during the time has gradually improved. He walks a little, and his limbs are gaining strength. I entertain strong hopes of his entire recovery.

Respectfully,

CHAS. P. ROSS.

NEWARK, N. J.—I have had one of your patent Wheel-Crutches in use over three years, and do not hesitate to attest its merits. The boy commenced using it when between 4 and 5 years of age, having been paralyzed, especially his limbs, from birth, and could not sit, stand, walk, talk or handle. Since that time we cannot help noticing marked improvement in him in many respects. Though not yet able to balance himself without it, by means of the Crutch he can go about the house and for several blocks in the street with ease. Aside from the pleasure it affords him, the exercise he gets from its use (which he could get in no other way) conduces to his general health, his appetite being good, and he sleeps well at night, (which was not the case before,) and he has improved more in talking during the last year than in all the rest of his life. The crutch was set at its lowest point when we got it, and we have been obliged to raise it to its full extent. It has been a great comfort to us who have had the care of him, and to him it is invaluable.

We shall be glad to have you refer to us at any time.

Truly yours,

JOS. H. MENAGH, 29 Webster St.

NORWICH, Ct.—The Wheel-Crutch came all right, and gives satisfaction. It is for a little girl 6 years old, who has not walked for nearly a year. She is perfectly delighted with it, and having seen one before, has enquired for it from the time I first ordered it.

Yours truly,

W. J. CHAPIN.

PHILADELPHIA, 1721 Market St.—I take this favorable moment to address you these few lines, and to let you know that I am improving greatly since I last saw you. There have been a great many people stopped, and have been examining my carriage; and the lady that resides on Bainbridge street, that had one of the carriages for her little girl, says she can get along without the use of her machine now. I will bring this to a close, hoping to hear from you soon.

I remain, your obedient servant, FRANK REILEY.

This Frank Reiley is a lad 19 years of age, who, previous to the use of the Crutch, had never walked. He now walks without it. His affliction was caries of spine, resulting in deformity of the body and lower extremities.

NEWARK, N. J.—Some two years since I purchased from you one of your Crutches for a friend who had been confined to her bed for more than a year. I am happy to say that it has proved a perfect success. She has recovered the use of her limbs, and walks about as formerly.

Yours truly,

S. G. GOULD,
Pres't American Fire Ins. Co.

NEWARK, N. J., Collector's and Auditor's Office.—Having used your Hide Corset for my boy, who has the inward and lateral curvature of the spine, I freely testify in its favor in preference to any other to which my attention has been called—having used the steel and leather brace for three or four years. I find your Corset has the double advantage of lightness and more extended and even pressure, and with the Crutch attachment is more efficient than any other. It is also more comfortable, and less likely to get out of order. He has used the Wheel-Crutch for about five months, and during that time I have been obliged to increase the height say two or three inches.

Yours truly,

J. H. HAZARD.

NEWARK, N. J.—I take pleasure in stating that my wife, after lying helpless for six months with inflammatory rheumatism, with no prospect of improvement, was advised by her physician to try one of your valuable Wheel-Crutches. With its aid she was enabled to assume an erect position and walk about the room; at first remaining only a few minutes in the crutch, but gradually prolonging her exercise as her strength increased. In three months she was able to go up and down stairs without assistance, and dispensed with the Crutch entirely. You may refer any one to me you desire.

Yours truly,

A. E. HAGGIS, Mason and Builder.

NEWARK, N. J.—I am pleased to state the following facts, hoping they may lead some other afflicted person to find the same relief I have obtained by your Wheeled Crutch.

For twelve years I was entirely unable to stand or support myself with crutches, owing to an affection of the spinal cord. There had been no change in my condition for many years, and all hope of ever walking had been abandoned, until I was persuaded to try your Wheel Crutch. My effort in using it at first was attended with some difficulty, requiring assistance to be lifted in it. My improvement was slow, but after two years' daily exercise with the Wheeled Crutch I have recovered, and can walk now without assistance.

MISS CAMPFIELD.

NEW YORK.—I can from experience recommend your Wheel Crutch to any one afflicted with spinal complaint; my little boy has entirely recovered the use of his limbs, and is now able to walk as straight as I do. For six months previous to using the Crutch he was unable to walk a step; he would sit by the hour, with his legs curled up under him, and when he wanted to move we were obliged to move him. From the time he commenced using the Crutch, he began to improve in every way and gained strength. He can now walk without the Crutch, and uses it more for amusement than anything else. He makes a horse of it, hitches a wagon to it and pulls it about after him. I consider it has saved his life. You may refer any one to me you choose; they can see for themselves.

Yours respectfully,

EDWIN F. LEE, 176 Broadway, N. Y.

GEHARD FIRE INS. CO., 141 BROADWAY, NEW YORK.—My experience with your Wheel Crutch has convinced me it is an important invention. You may refer any one to me. I can recommend it. Yours, &c., J. R. SMITH.

NEW YORK.—I am happy to state that my little girl, for whom I purchased one of your Wheel Crutches (by advice of my Physician,) is rapidly improving in walking. I consider it the best invention of the age. In fact I cannot speak too highly in its praise. You may refer any one to me personally you desire.

Your obedient servant,

JAMES R. BOYD, No. 3 William Street, N. Y.

RICHMOND, VA.—We have used the Wheel Crutch some every day. Our child has improved and strengthened. His limbs are certainly larger and firmer. The doctor says it is all he expected and desired it to be.

Yours very truly,

MRS. —

WEST ORANGE.—I am pleased to state that my son who is now twelve years old has never been able to stand or walk in any way, but now with your Wheel Crutch, he can go when and where he pleases on level road without help and is improving.

Respectfully,

WILLIAM CLORER.

NEW YORK.—It affords me pleasure to say that having used your Wheel Crutch for three months, I have found great benefit and comfort with it.

Having been confined to my room for more than three years with chronic rheumatism and unable to walk, with your Crutch I can walk about the house with ease. The exercise I thus obtain has benefited my general health and I have reason to hope will in time remove my lameness. Your improved knee-brace I have used daily for two months. It is very comfortable and both strengthens and straightens my limbs and has proved an important aid. To any person similarly affected I think your apparatus invaluable.

Yours respectfully,

— — — 24 W. 10 St.

265 ORANGE ST., NEWARK, N. J.—I cannot help sending you my most grateful thanks on account of my child who you found sick and helpless. She had been suffering for four years with caries of the spine, being hump-back. For three years I tried in vain various instruments physicians had applied and orthopedic treatment. At last she could not walk or stand and had been so helpless as you found her for one year. But from the time she began to use your Wheel Crutch she improved continually. In six months she was able to do without the Crutch; during that time the Crutch was gradually raised more than six inches. My child is now strong and hearty, perfectly upright, and can run and jump and is as active as any one. The raw-hide body-support you made for her was very comfortable; she wore it night and day, and I think it was a very important aid with the Crutch. Out of my own experience I can most earnestly recommend your apparatus for such disease.

Respectfully yours,

VALENTINE SCHMITT.

RYE.—It gives me great pleasure to inform you that I am well satisfied with the progress my little daughter is making with the Wheel Crutch. She has been using it for only three months and is now able with its assistance to walk perfectly well; her ankles are becoming so strong that with but very slight support she is able to stand, bearing all her weight on her feet. Her general health is better and she is much less wakeful at night. I have every confidence that the continued and judicious use of it in her case will produce all and every result we anticipated.

Yours truly,

FLORIDA, ORANGE CO., N. Y.—The Crutch came all right and gives good satisfaction. My wife is much pleased with it and is greatly benefited. From the time she commenced using it (which is about three weeks), she has improved in every way and gains strength. Our family physician says it is the best thing of the day for spine disease or paralysis.

Yours respectfully,

A. L. NANNY.

MONTCLAIR.—This offering of the overflowing of a grateful heart for the great benefit your invaluable invention has been to my daughter. After seven years' trial of Physicians and Surgeons, nothing has ever been as satisfactory as your Wheel Crutch. My once greatly afflicted and helpless daughter is improving and now able to walk from room to room; by the aid of her little boy's arm can go up and down stairs. She is gaining flesh in her lower limbs and throughout her whole system is much stronger. The numbness of extremities is no longer felt, but instead a burning and pricking sensation at times. She is not now carried about, but helps herself in every way; she uses the Crutch without the supporter, sleeps and eats well. She is a wonder to us all. What a blessing you have been.

With much respect, believe me your sincere and grateful friend,

ADALINE W. TORRY.

MONTCLAIR.—My daughter has suffered from Spine trouble, which three years since resulted in nervous paralysis, rendering her unable to walk or stand, destroying all power of motion in lower limbs. After using all means known to Physicians, without benefit, we obtained your Wheel Crutch last January. The operation of getting her in and out of it at first was attended with inconvenience, and for some time she could not move when in it. By perseverance she is now able to walk naturally and quickly with the Crutch, and short distances without it, and is no longer dependent upon assistance for anything. I assure you it is with great pleasure we recommend its use to all afflicted in like manner. Will be happy at any time to see persons wishing to understand the working of your valuable Crutch, believing it to be one of the great inventions of the age. Yours very truly,

Above case is now completely restored.

BROOKLYN, N. Y.—The Wheel Crutch we purchased of you has given entire satisfaction. Our son, now a little over three years old, has been paralyzed in his right side about one year and a half, being able to creep only. He commenced to use the Crutch immediately on its arrival, and in a short time was able to guide it so he could go wherever he pleased about the rooms. He is improving very rapidly and we have strong hopes of his being able to walk alone in a short time. We have no hesitation in saying that the Crutch has been of more benefit to the child than we first expected, and has done him a world of good; and am thankful to the friend who advised us to get one.

Yours truly,

CHAS. F. MACKENZIE, 316 Hancock St.

Above case is completely restored since above report.

FISHKILL, ON HUDSON.—My daughter is much pleased with her Wheel Crutch, and it is a *very great benefit* to her. She can now walk in it without assistance, and has much pleasure and comfort in using it. I doubt not it will be an invaluable blessing to her, and I trust the invention may be a comfort and relief to many who are likewise helpless and despondent. May you be richly rewarded for your faithful endeavors in thus relieving the afflicted; you have my best wishes for success.

Respectfully yours,

A. L. SCHENCK.

CLINTON, N. Y.—My little boy spends from one to three hours daily in his Crutch and now goes all about the house from room to room on same floor. His limbs are developing and he has decidedly improved by it. He now goes without the body-support. I will write you again when he has used it long enough to show more results. Yours truly,

Prof. ALBERT H. CHESTER.

NORFOLK, VA.—My little boy is gradually improving, and we hope ere many months he will get well and walk. The Crutch is highly satisfactory and the best thing of the kind I have seen.

Truly yours,

D. G. COWAND.

NEW ORLEANS.—I am happy to state that the Wheel Crutch has been a great relief and comfort to my daughter. It is the most perfect support for invalids I have ever seen.

ANNA LEDOUX, 295 Rampart Street.

NEWARK, N. J.—In the name of the managers of the Home of the Friendless I have to thank you very sincerely for your kindness in giving us the Wheel Crutch for the poor little cripple at the Home. She has derived great benefit from it and I am sure she as well as all of us, tender you our hearty thanks.

With great appreciation of your kindness, believe me, very sincerely and thankfully yours,
T. HOWELL Secretary of Home.

NEW YORK, 115 East 60th Street.—Of inventions there is no end, but of all inventions your Patent Wheel Crutch caps the climax for the benefit of invalids like myself. For three years I have been deprived of the use of my limbs from spinal causes, unable to stand or take a step without the aid of a very strong arm, but now, thanks to your ingenuity in inventing the Wheel Crutch, I am able to walk from one-eighth to a quarter of a mile at a time, and this repeated through the day according to inclination and strength. It adds greatly to my pleasure and the exercise from it improves my general health in very many respects. I have tried all kinds of experiments to produce like results, but your Wheel Crutch is the only article that has accomplished the desired object. My earnest desire is that its great merits may be made known to my fellow invalids, and they thereby derive the same benefits from its use that I have.

Wishing you the success your invention entitles you to, and with personal gratitude for the great benefit and pleasure derived from the use of your Wheel Crutch,
Yours truly,
JOHN N. GENIN.

HOBOKEN, N. J.—My little boy was two years old when I procured your Wheel-Crutch. He was paralyzed from the time of his birth, and entirely helpless; could not turn himself over, creep, or sit up; was extremely wakeful and troublesome at night, and continued in this condition without change. Physicians could give no relief, or encourage a hope that he would ever walk. After being fixed with your *complete* back and body support, and adjusted in his Wheel-Crutch, a new life seemed opened to him. It has been a constant pleasure and blessing to him, and immense relief to all interested in his welfare or care of him. Improvement was perceptible very soon after obtaining the Crutch, and has continued without interruption; lately more rapidly. He has used the Crutch one year, and is now a vigorous, hearty child, sleeps and eats well, and is growing fast. He can run quite rapidly in his crutch, and is never more happy than when out for his walk or playing about the yard. He spends a greater part of the day in it. The sun-shade and toy-tray are very desirable attachments to the crutch, and add much to comfort and pleasure of the child. Our physician says it is the best apparatus for such cases he has ever seen.

Yours truly,

W. H. DILWORTH.

of Gordon & Dilworth, 575 & 573 Greenwich St., N. Y.

HOUSTON, TEXAS.—The Wheel Crutch which I purchased of you by advice of Dr. Sayre has been a great benefit and comfort to my little boy. Please send me a few of your circulars. Your obedient servant,
C. E. GREGORY.

